

# Network Frames Page

*Built-in network diagnostics*

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Whilst debugging network communications, it can be helpful to see what network frames a local station has recently processed. The token ring chipset DMA's frames into a large (currently 64K bytes) circular network receive buffer. Each frame takes only the space needed for its size. Similarly, token ring frames are assembled in another circular frame buffer. A 16-byte record is written into data stream #0 about each frame processed by the system software. Enable this feature by creating DSTRM table entry #0 for a data stream called NETFRAME and resetting. (Nearly all local stations have this data stream installed already.) The system support for data streams makes this information available to a requester. The Network Frames page, usually installed as page F, provides a user interface to access the data from this data stream.

```
0  F NETWORK FRAMES  03/24/92 1358
1  NODE<0601> #RCVD= 237 LIST<0000>
2  NODE=0000 - SIZE=0000 TIME=0000
3  0624 000C R 06E86E 1357:50-05+33
4  0616 000C R 06E890 1357:50-06+ 5
5  0623 000C R 06E8B2 1357:50-06+15
6  0610 0016 R 06E8D4 1357:50-06+18
7  0611 000C R 06E900 1357:50-06+19
8  0610 000C R 06E922 1357:50-06+21
9  061E 01F8 R 06E944 1357:50-06+23
10 0617 000C R 06EB52 1357:50-06+24
11 061E 000C R 06EB74 1357:50-06+24
12 0614 000C R 06EB96 1357:50-06+25
13 0624 000C R 06EBB8 1357:50-06+32
14 0053 02B8 T 08AD42 1357:50-06+41
```

Specify the node from which information about recent network frames is to be collected and interrupt on row 1 to request and capture the data. The number of frame records collected is shown in the RCVD field. The filter specs on row 2 restrict the resulting listing by sending/target node and/or frame contents size and/or time received. One may use the operators = (equal), ! (not equal), > (greater than or equal) and < (less than) to specify the filtering logic. Disable a filter by using the value 0000. One may also enter a T or R in place of the - to restrict the list to Transmitted or Received frames only. The resulting listing, scrollable by pages, starts on row 3.

Interrupt on row 2 to regenerate the listing (and reset the scroll offset) based upon any changed filtering options. If the field after the LIST prompt on row 1 is nonzero, the entire listing is also written to the serial port of that node.

the frame in the circular buffer, and the time-of-day the frame was processed.

The time-of-day is specified as HrMn:Sc-Cy+ms to include the 15 Hz cycle (range 00–14) and the milliseconds into that cycle. Note that this marks the time that the frame was processed at the task level, not the time of the network interrupt. For a received frame, it is the time that the frame is being processed by the task that was made active in response to the receive interrupt. For a transmitted frame, it is the time that the frame is assembled in the circular buffer and being passed to the chipset for transmission. Thus, the elapsed time between a request frame and a reply frame can be seen as the software turn-around time.

In the case of the example shown above, node 0601, running its parameter page application locally, had requested some 15 Hz single channel readings and settings from 9 different nodes. The part of the list shown shows the frames from each node received during cycle 06 of time 1357:50 one week after St Patrick's Day, 1992. In each case, the size of the frame was 000C bytes, which is correct for a Classic protocol reply of a reading word and a setting word. The earliest contributing node was 0616, and the latest was 0624. There is an additional frame coming from node 0610 and also a larger one from 061E. At the bottom of the part of the list shown, there is a transmitted reply to node 0053 that is sent at 41 msec into the cycle, which correlates with the fact that the Server Task is scheduled to run at 40 msec into the cycle; hence, this is likely a server reply to an accelerator (RETDAT) request. With the rate of frame processing shown, the 237 frames covers only about 2 seconds of time on that sunny spring afternoon.

Interrupt on a listing line to change the listing area to show the frame contents itself à la scrollable memory dump. Interrupt again to switch back to redisplay the frame list. This is successful only if the circular buffer, either for received or transmitted frames, has not “wrapped” since the data was collected.

For Acnet header frames, the destination and source node words and the destination task name words are byte-swapped when viewed as received frames. They appear in network order when viewed as transmitted frames.